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2. Record Nr.	UNINA9910953383603321
Autore	Flicker Yuval Z (Yuval Zvi), <1955->
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Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Preface -- pt. 1. On the symmetric square lifting introduction. 1. Functoriality and norms. 1.1. Hecke algebra. 1.2. Norms. 1.3. Local lifting. 1.4. Orthogonality. II. Orbital integrals. II.1. Fundamental lemma. II.2. Differential forms. II.3. Matching orbital integrals. II.4. Germ expansion. III. Twisted trace formula. III.1. Geometric side. III.2. Analytic side. III.3. Trace formulae. IV. Total global comparison. IV. Total global comparison. IV.1. The comparison. IV.2. Appendix: Mathematica program. V. Applications of a trace formula. V.1. Approximation. V.2. Main theorems. V.3. Characters and genericity. VI. Computation of a twisted character. VI.1. Proof of theorem, anisotropic case. VI.2. Proof of theorem, isotropic case -- pt. 2. Automorphic representations of the unitary group $U(3,E/F)$ introduction. 1. Functorial overview. 2. Statement of results. I. Local theory. I.1. Conjugacy classes. I.2. Orbital integrals. I.3. Fundamental lemma. I.4. Admissible representations. I.5. Representations of $U(2,1;C/R)$ . 1.6. Fundamental

lemma again. II. Trace formula. II.1. Stable trace formula. II.2. Twisted trace formula. II.3. Restricted comparison. II.4. Trace identity. II.5. The [symbol]-endo-lifting  $e'$ . II.6. The quasi-endo-lifting  $e$ . II.7. Unitary symmetric square. III. Liftings and packets. III.1. Local identity. III.2. Separation. III.3. Specific lifts. III.4. Whittaker models and twisted characters. III.5. Global lifting. III.6. Concluding remarks -- pt. 3. Zeta functions of Shimura varieties of  $U(3)$  introduction. 1. Statement of results. 2. The zeta function. I. Preliminaries. I.1. The Shimura variety. I.2. Decomposition of cohomology. I.3. Galois representations. II. Automorphic representations. II.1. Stabilization and the test function. II.2. Functorial overview of basechange for  $U(3)$ . II.3. Local results on basechange for  $U(3)$ . II.4. Global results on basechange for  $U(3)$ . II.5. Spectral side of the stable trace formula. II.6. Proper endoscopic group. III. Local terms. III.1. The reflex field. III.2. The representation of the dual group. III.3. Local terms at  $p$ . III.4. The eigenvalues at  $p$ . III.5. Terms at  $p$  for the endoscopic group. IV. Real representations. IV.1. Representations of the real  $GL(2)$ . IV.2. Representations of  $U(2,1)$ . IV.3. Finite-dimensional representations. V. Galois representations. V.1. Stable case. V.2. Unstable case. V.3. Nontempered case.

## Sommario/riassunto

The area of automorphic representations is a natural continuation of studies in number theory and modular forms. A guiding principle is a reciprocity law relating the infinite dimensional automorphic representations with finite dimensional Galois representations. Simple relations on the Galois side reflect deep relations on the automorphic side, called "liftings". This book concentrates on two initial examples: the symmetric square lifting from  $SL(2)$  to  $PGL(3)$ , reflecting the 3-dimensional representation of  $PGL(2)$  in  $SL(3)$ ; and basechange from the unitary group  $U(3, E/F)$  to  $GL(3, E)$ ,  $E:F = 2$ . The book develops the technique of comparison of twisted and stabilized trace formulae and considers the "Fundamental Lemma" on orbital integrals of spherical functions. Comparison of trace formulae is simplified using "regular" functions and the "lifting" is stated and proved by means of character relations. This permits an intrinsic definition of partition of the automorphic representations of  $SL(2)$  into packets, and a definition of packets for  $U(3)$ , a proof of multiplicity one theorem and rigidity theorem for  $SL(2)$  and for  $U(3)$ , a determination of the self-contragredient representations of  $PGL(3)$  and those on  $GL(3, E)$  fixed by transpose-inverse-bar. In particular, the multiplicity one theorem is new and recent. There are applications to construction of Galois representations by explicit decomposition of the cohomology of Shimura varieties of  $U(3)$  using Deligne's (proven) conjecture on the fixed point formula.